REMARKS

Claims 1-14 are pending in the application and all claims are rejected.

Claims 1-3 and 5-9 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Sieber et al in view of Huston et al for the reasons of record.

Applicants respectfully traverse the rejection.

The Examiner correctly understands that Sieber et al discloses a method comprising applying target radiation or ultraviolet rays to a means containing a terbium-samarium co-activated alkaline earth metal rare earth oxide phosphor to cause the phosphor to emit a light. As admitted by the Examiner, Sieber et al lacks measurement of the light strength variation per unit of time.

To remedy this deficiency the Examiner relies on Huston et al. With respect to Huston et al, the Examiner states that Huston et al teaches that phosphors scintillate when exposed to ionizing radiation which advantageously permits real-time monitoring of ionizing radiation. This is incorrect. Huston et al teaches that OSL (Optically-Stimulated Luminance) glasses scintillate when exposed to ionizing radiation. See column 2, lines 47-67. The OSL glasses described in Huston et al are not directly, comparable to terbium-samarium co-activated alkaline earth metal rare earth phosphors as recited in claim 1. Thus, it is incorrect to say that Huston et al teaches that terbium-samarium co-activated alkaline earth metal rare earth phosphors scintillate when exposed to ionizing radiation and it cannot be said that Huston et al teaches that terbium-samarium co-activated alkaline earth metal rare earth phosphor scintillation permits real-time monitoring of ionizing radiation.

Further, the Examiner's statement that inherent in real time monitoring is measurement as a function of time is incorrect for the following reasons.

Claim 1 of the present application recites:

> A method of measuring a radiation dose which comprises the steps of co-activated alkaline earth metal rare earth phosphor, to cause the phosphor to emit a green light; and
> measuring a variation per unit time of strength of the green light.

The invention defined in claim 1 is based on the discovery of the Applicants that the terbium-samarium co-activated alkaline earth metal rare earth phosphor emits a green light showing time-dependent variable emission intensity when excited with X-rays. See page 7, lines 26-30 and page 9, lines 9-13 of the specification, and the solid line 1 in Fig. 2 and the curved line in Fig. 3 of the application. This is in contrast to variation of emission intensity observed when a terbium activated alkaline earth metal rare earth phosphor is excited with X-rays. See page 9, lines 13-16 and Fig. 4. The time-dependent variable emission of the green light was not known in the art at the time that the present application was filed. Specifically, Applicants discovered that this interesting phenomenon can be utilized for measuring a radiation dose.

As previously discussed, Huston et al teaches that OSL glasses scintillate when exposed to ionizing radiation which advantageously permits real-time monitoring of ionizing radiation. The Examiner states that inherent in real time monitoring is measurement as a function of time. This is not correct because real time monitoring is performed to continuously or intermittently measure a certain phenomenon just when the phenomenon occurs and does not always measure a variation of the phenomenon.

Assuming *arguendo* that the Examiner's understanding is correct, a point which Applicants do not concede, one of ordinary skill in the art would not have been motivated to combine Sieber et al and Huston et al with a reasonable expectation of success in achieving the claimed invention because the time-dependent variable emission of the green light of the terbium-samarium co-activated alkaline earth metal rare earth phosphor was not known in the art when the invention was made. Thus, one of ordinary skill in the art would not have been motivated to utilize the green light of the terbium-samarium co-activated alkaline earth metal rare earth phosphor with the dosimeter of Huston et al, for measuring a radiation dose. Accordingly, the rejection as applied to the radiation dose-measuring method recited in claim 1 is unwarranted. Claims 2-3 depend from claim 1 and are distinguished for at least the same reasons.

The radiation image producing method defined in claim 5 and claim 6, which depends from claim 5, utilizes the idea of claim 1 to produce two-dimensional image data. Therefore, for the same reasons discussed above, claims 5 and 6 are distinguished over the art.

The method of measuring a dose of ultraviolet rays defined in claim 7 and its dependent claim 8, utilizes the idea of claim 1 to replace the radiation dose with a dose of ultraviolet rays. Thus, claims 7 and 8 are distinguished over the art for the same reasons as discussed above.

Accordingly, Applicants respectfully request withdrawal of the rejection.

Claims 4 and 10 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Sieber et al in view of Hutson et al and further in view of Kastner et al for the reasons of record.

Applicants respectfully traverse the rejection and submit that Sieber et al and Hutson et al do not teach all of the elements of claim 1 for the reasons set forth above. Kastner et al does not remedy the deficiencies of the combination of Sieber et al and Hutson et al with respect to claim 1 and therefore the invention of claim 4 which depends from claim 1 is distinguished over the art for at least the same reasons.

Further, the method of measuring a dose of ultraviolet rays defined in claim 7 and its dependent claim 10, utilizes the idea of claim 1 to replace the radiation dose with a dose of ultraviolet rays. Therefore, for the same reasons discussed above, claims 7 and 10 are distinguished over the art.

Accordingly, Applicants respectfully request withdrawal of the rejection.

Claims 11-14 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Sieber et al in view of Dewaele, Arakawa and Brixner. Sieber et al, Dewaele and Arakawa are applied as in the Office Action dated January 7, 2003. Brixner is relied upon for the teaching of excitation of phosphors comprising charge (e.g., an electron) trapping by activators.

Applicants respectfully traverse the rejection for the following reasons.

In the Office Action, the Examiner states that Sieber et al discloses a method comprising the steps of (a) applying a target radiation to a dosimeter containing a terbium-samarium co-activated alkaline earth metal rare earth oxide phosphor so as to excite the phosphor to emit a light and (b) applying stimulating radiation to the dosimeter to which the target radiation has been applied to cause the phosphor to emit stimulated emission; and (c) measuring the stimulated emission.

The Examiner's understanding of Sieber et al is partially incorrect in that the method of Sieber et al is not for measuring a radiation dose but for reproducing a radiation image. Thus, the radiation dose is not measured in the method of Sieber et al. Moreover, the radiation data to be reproduced are not the radiation data of the stimulating radiation but the first applied radiation data. The radiation data are reproduced utilizing the stimulated emission. Thus, in the method of Sieber et al, the emission utilized for the image reproduction is a stimulated emission which is not directly caused by the radiation to be reproduced but caused by application of the stimulating radiation. This is in contrast to the present invention, which utilizes a spontaneous emission that is produced upon application of the radiation to be measured.

Further, Sieber et al does not teach the emissions of green light and red light and does not teach or suggest the use of these emissions in combination, for measuring a radiation dose or for producing a radiation image. These characteristics of the claimed invention are not taught or suggested by any of the cited references whether taken alone or in combination. Even further, Dawaele, Arakawa and Brixner are each silent with respect to the terbium-samarium co-activated alkaline earth metal rare earth oxide phosphor. Therefore, one of ordinary skill in the art would not have been motivated to combine the references with a reasonable expectation of success in achieving the claimed invention.

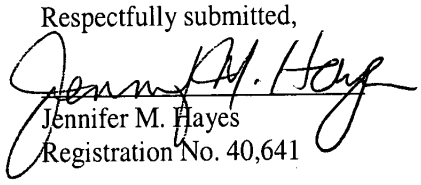
Accordingly, Applicants respectfully request withdrawal of the rejection.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the

Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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23373
CUSTOMER NUMBER

Date: February 18, 2004